

INTRODUCTORY COMMENTS

Summary of Office Action

Claims 1-3 were pending in the application.

The Examiner rejected claim 1 under 35 U.S.C. § 102(b) as anticipated by either U.S. Pats. No. 5,066,250, to Welsh, or No. 4,904,194, to Kilsdonk et al.

The Examiner rejected claims 2 and 3 under 35 U.S.C. § 103(a) as rendered obvious by U.S. Pat. No. 4,773,661, to Adams III, in view of U.S. Pats. No. 4,345,813, to Hatch, and No. 3,287,031, to Simmons et al.

Summary of the Applicant's Response

Claims 1-3 have been cancelled.

New claims 4-5 are submitted.

REMARKS

Newly submitted independent claim 4

In the Non-Final Office Action mailed on May 25, 2004, the Examiner rejected claim 1 under section 102(b) as purportedly anticipated by U.S. patents issued to either Welsh or Kilsdonk et al. The Examiner opined that Kilsdonk's "fig. 1 shows a key comprising a substantially L-shaped block 2 made of hard metal having a short arm 10 and a long arm 26 having at a substantially mid portion a removal preventing protrusion 18." Office Action at page 2 (emphasis added). The Examiner further opined that Welsh's "fig. 2 shows a key 62x comprising a substantially L-shaped block 116 made of a hard metal having a short arm 128 and a long arm 90 having at a substantially mid portion a removal preventing protrusion 77." *Id.* (emphasis added).

Kilsdonk discloses "a grounding pin comprising a spring attached to an electrically conducting post." Col. 1, lines 40-42. Kilsdonk is thus not only directed to a completely different object than the misconnection-proof connector of the present application, Kilsdonk's item 10, rather than being the short arm of an L-shaped connector, as stated by the Examiner, is in fact a collar that completely surrounds the post and is located away from its ends,

see col. 2, lines 19-24, FIG. 1, and Kilsdonk's item 26, rather than being a long arm of the L-shaped connector, as stated by the Examiner, is in fact a semicircular tongue extending from the post. See col. 3, lines 6-12.

Welsh discloses a connector for use with modular rack-mounted military electronics, each module comprising a heat sink plate with circuit boards laminated to its sides. Col. 1, lines 5-20. Welsh is thus not only directed to a completely different object from the misconnection-proof connector of the present application, Welsh's connector comprises pairs of mating hexagonal keys, one key being mounted on the rack and the other on the module, *see col. 4, lines 44-64; FIGS. 7 and 9*, while the miconnection-proof connector of the present application comprises substantially L-shaped keys that fit into slots. *See Paragraph [0007].* Further, Welsh's key 62x, rather than comprising a substantially L-shaped block 116 having a long arm 90 having at a substantially mid portion a removal-preventing protrusion 77, as stated by the Examiner, is in fact a key having a portion that is divided into forward parts, shown as 117 in FIG. 7 and 77 in FIG. 9, and rearward parts, shown as 119 in FIG. 7 and 75 in FIG. 9, by a step. *See FIG. 7, item 130, and FIG. 9.*

In contrast, newly submitted claim 4 claims "a plurality of misconnection-proof keys each having a substantially L-shaped block made of a hard metal including a short arm and a long arm intersecting therewith at right angles thereto and having at a substantially mid portion on its surface a removal-preventing protrusion integrally formed therewith." Claim 4 further claims "a plurality of slots . . . [having] removal-preventing means" which accommodate said long arms of said misconnection-proof keys."

Accordingly, for at least the reason that neither Kilsdonk nor Welsh disclose (1) a substantially L-shaped block (2) having at a substantially mid portion on its surface a removal-preventing protrusion integrally formed therewith or (3) a plurality of slots which accommodate said long arms of said keys, Applicant respectfully submits that new claim 4 cannot be anticipated by Kilsdonk or Welsh.

In the Non-Final Office Action mailed on May 25, 2004, the Examiner rejected dependent claims 2 and 3 under section 103(a) as purportedly rendered obvious by U.S. Pat. No. 4,773,661, to Adams III, in view of U.S. Pats. No. 4,345,813, to Hatch, and No. 3,287,031, to Simmons et al. The Examiner opined that "Adams III shows a connector having a plurality of

keys 10, 11, 12, an insulating block 2 having contacts 3, a metal shell 39 covering the block and a plurality of slots at the end of the block for receiving keys 10, 11, 12.” Office Action at page 3. The Examiner further opined that, though Adams III “does not show the keys being L-shaped block[s] having a removal preventing protrusion[] at a substantially mid portion of a long arm and the block being made of a hard metal[,] Hatch figs. 7 and 12 show a key 50 being [an] L-shaped block having a short arm 87 and a long arm 84 having [a] removal preventing protrusion 88 at a substantially mid portion thereof.” *Id.* (emphasis added). The Examiner also opined that “Simmons fig. 2 shows a key 43 being made of a hard metal[,] [i]t would have been obvious to one with skill in the art to form the keys to be L-shaped with [the] features . . . taught by Adams []III and Simmons, in order to provide better gripping and more strength for the keys.” *Id.* (emphasis added).

Adams III discloses a keying mechanism for use in connector assemblies, the plastic keying means 10, 11, 12, being formed during manufacture using known plastic forming techniques. Col. 3, line 54 to col. 4, line 8. Thus, in addition to the lack of an L-shape and manufacture from of hard metal, as noted by the Examiner, unlike the keys of the present application, the plurality of keys 10, 11, 12, of Adams III are formed during manufacture and so cannot be varied in use or in the field.

Hatch’s connector element 50, shown in FIGS. 7 and 12, unlike the hard metal L-shaped key of the present application, and like the keying mechanism of Adams III, is made of resilient plastic. Col. 5, lines 3-8. Hatch teaches that such resilient plastic is required to allow the trunk portion 84 of keying element 50 to distort and permit the passage of the shoulder 89 of the tab 88 through the requisite opening 82 in the connector wall. Col. 5, lines 19-24. Further, unlike the present misconnection-proof connector, in which the long arm is inserted into the slot until the removal-preventing protrusions are fitted into the removal preventing means, in Hatch, it is the tab 88 which is inserted into the opening 82 in the connector wall, while the deformable trunk portion 84 remains disposed in a shallow groove. *See* FIG. 8. Finally, Hatch’s connector, unlike the present misconnection-proof connector, as a result of the fixed position of the Hatch’s keying elements and central ridge 37, *see, e.g.*, FIGS. 1 and 3, cannot be configured by the user.

Simmons discloses a male-to-female tubular grooved coupling intended for use with the explosive charges that initiate the rocket stages which are used to power space vehicles.

Col. 1, lines 19-44. Simmons plug members **43**, which the Examiner characterizes as being keys, are not L-shaped. *See FIG. 2*; Col. 3, lines 36-43. In any event, Simmons is taken from a nonanalogous art that is unrelated to the present misconnection-proof connector.

Newly submitted independent claim 4 claims, among other things, “misconnection proof keys each having a substantially L-shaped block made of a hard metal,” wherein the “long arms of said misconnection-proof keys are inserted into [] slots until the removal-preventing protrusions of said keys are fitted in said removal-preventing means,” and “a plural number of combination connection for the connectors with the mating connectors to be inserted can be obtained and the number of said combinations can be varied by changing the insertion positions of said misconnection-proof keys.”

Accordingly, Applicant respectfully submits that, even if there were sufficient motivation to combine Adams III, Hatch and Simmons, which there is not, the combination of these references cannot render new claim 4 obvious for at least the reason that Adams III, Hatch and Simmons, together or separately, do not teach, disclose or suggest inserting the long arms of misconnection-proof keys into slots until the removal-preventing protrusions of the keys are fitted in removal-preventing means.

Applicant further submits that, setting aside the failure of the combination of Adams III, Hatch and Simmons to disclose, teach or suggest all of the elements of claim 4, it would not have been obvious to one of skill in the art to combine elements of the plastic keys of Adams III with elements of the plastic keys of Hatch and the metal plugs of Simmons, for at least the reasons that (1) Hatch, by referring to the need to use deformable plastic, and Adams III, by referring to known plastic forming techniques, expressly teach away from the use of a hard metal and (2) Simmons is taken from a completely nonanalogous art and thus fails to provide any motivation to combine.

The Examiner further wrote, with respect to the section 103(a) rejection of claim 3, that “the form of the metal shell with openings would have been obvious of modification since such a change would provide access to the removal preventing means for removing the keys.” Office Action at page 3. Applicant respectfully submits, notwithstanding the cancellation of claim 3, that none of the prior art cited by the Examiner, either taken together or separately, teaches such a limitation.

For the reasons given above, Applicant respectfully submits that newly submitted claim 4 is neither anticipated nor rendered obvious by the prior art cited by the Examiner.

Dependent claims 5

Claims 5 is directed to the embodiment shown in FIG. 2 having four slots and three keys. Applicant respectfully submits that, in the event that independent claim 4 is deemed allowable, it follows that claim 5, which depends from claim 4 and so contain all of its limitations, will also found to be neither anticipated nor rendered obvious by the prior art cited by the Examiner.

CONCLUSION

Applicant respectfully submits that this application is in condition for allowance, and such disposition is earnestly solicited. Applicant believes that no fees are due in addition to those associated with the accompanying petition for a one-month extension. In the event that any further fees are due, please charge undersigned's Deposit Account No. 02-4377.

Respectfully submitted,

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